MEMORANDUM FOR: Bonnie -

Please make 2 XEROX
Copies and return to me -
I'll file them in the
appropriate place -

jmc.

(DATE)

Done - Bonnie

FOR). 101 REPLACES FORM 10-101
1 AU 54 WHICH MAY BE USED. (47)

MEMORANDUM FOR: John -

Please note the attached
memo & then have Bonnie
file it in the contract file
after making me a copy.

Thanks.

HDP
(DATE)

FORM . 101 REPLACES FORM 10-101
1 AU 4 WHICH MAY BE USED. (47)

TOP SECRET

29 September 1969

Copy 2

MEMORANDUM FOR: Chief, Technical Services & Support Group, NPIC

SUBJECT: DIR Utility

1. In a discussion with [redacted] and myself, it became evident that questions are being asked concerning the utility of DIR within the Center. I would therefore like to shed some light on the subject from an APSD viewpoint.

2. The prime types of degradations which appear to be good candidates for digital image restoration are:

a. Out of focus conditions

b. Image smear due to incorrect IMC, vibration, etc.

c. "Out of focus" due to faulty filters

d. Film noise

3. When any, or a combination of these degradations occur on film there is, depending on the importance of the target, a need to restore the imagery to fulfill PI requirements. The nature of these requirements may vary. For example: It may be for initial identification, discrimination between types, to insure correct identity or to increase information (detail). In addition, restoration may be desired to assist in improving accuracy of mensuration. Often defocused or smeared imagery makes mensuration a next to impossible task. A restoration technique is a solution to recovery of such information. In an effort to avoid degradation on future missions, it is prudent to feed back to the operations people data that will assist them in implementing corrective measures. Image restoration techniques can be used to determine magnitude and direction of smear, etc. In other words, by understanding the characteristics of the degradations, corrective measures may more easily and cheaply be employed.

TOP SECRET

SUBJECT: DIR Utility

4. Having an operational DIR capability should provide us with the opportunity to extract more information from our degraded materials - especially information which is near, or at the noise threshhold level. Hopefully, this information, using DIR, could be recovered in a rapid, one-step operation. That is, through one series of manipulations, degradations in focus and image smear could be compensated.

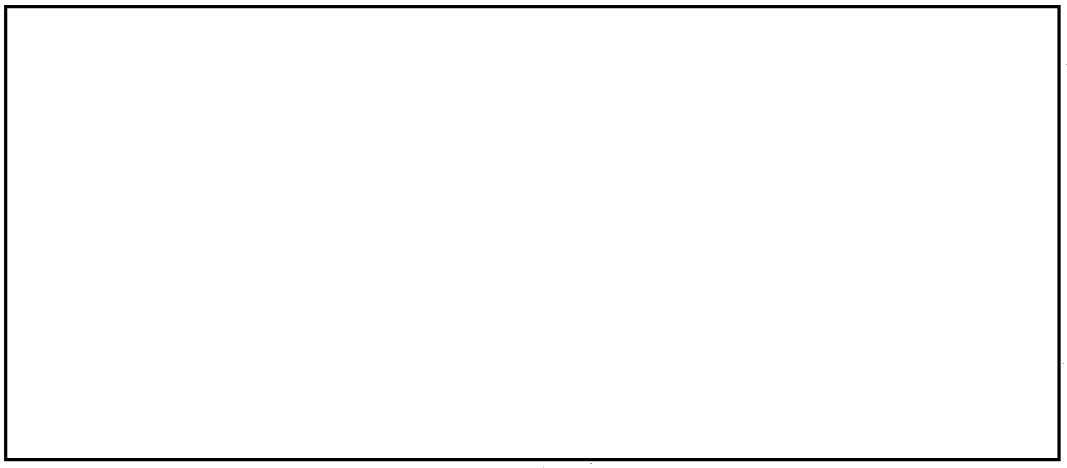
5. It could be argued that degraded targets could be acquired on the next flight. However, there are examples of "one time" situations where this is impossible. One might cite the following:

a. Missile on a pad. The missile may not be on the pad on the next revolution or mission. Therefore, if the photography has been degraded, the only solution to gaining the required information may rest in restoration.

b. Damage assessment. Nominal damage is quickly altered or cleaned up. Once again if the photography has been degraded restoration may be the only solution.

c. Moving targets. This is quite evident. There may never be an opportunity to re-photograph a moving target. If the photo from a moving target is degraded, restoration may be the only solution.

6. The following is a list of projects which have been received and worked on by APSD, mostly using Iso-d which possibly could have been more effectively treated using DIR:



SUBJECT: DIR Utility

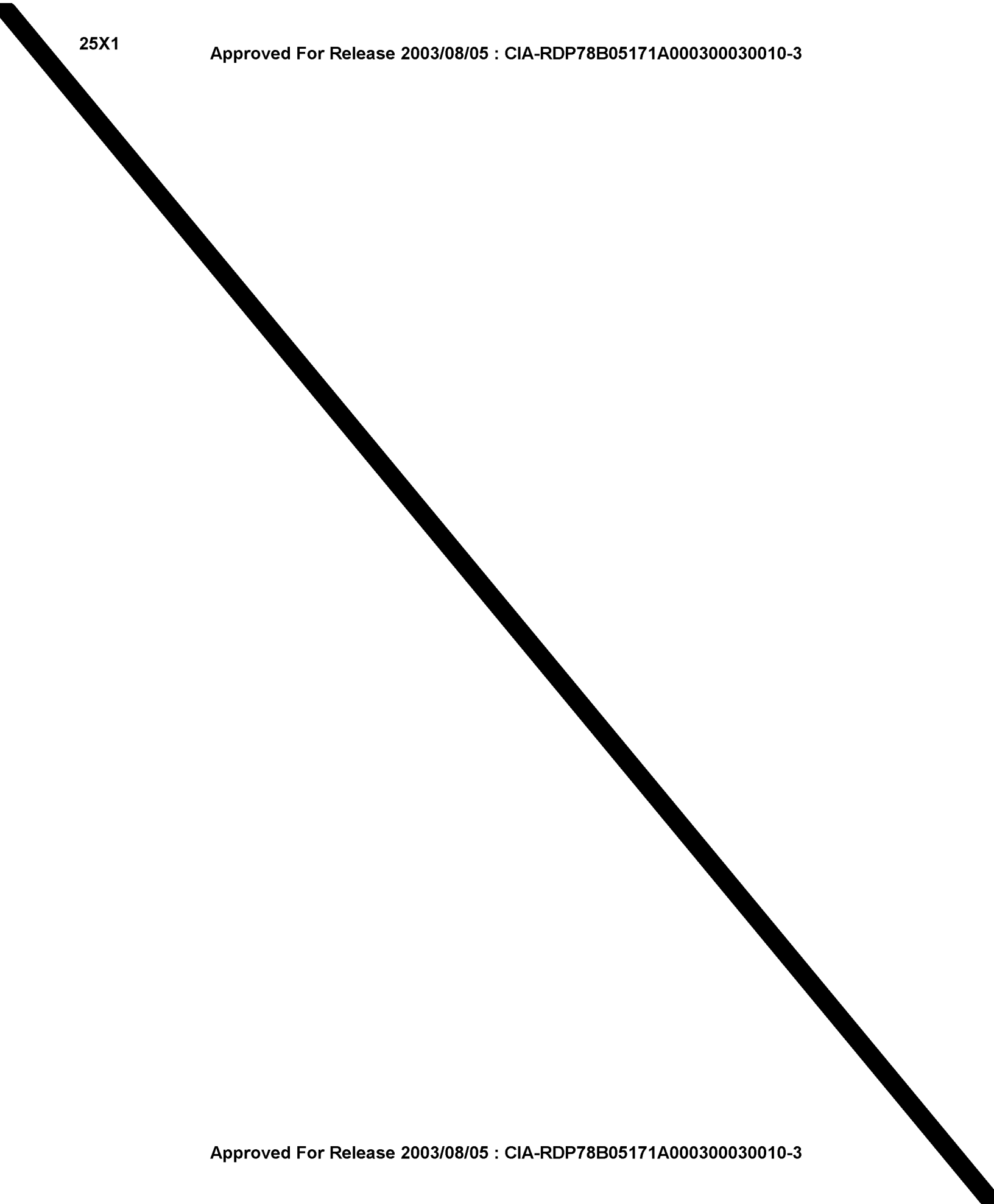
Missile Rentry vehicle (identification on intercept imagery)

Wonson Harbor for Pueblo

7. There appears to be a need for a restoration technique. Not because it is required for the recovery of information on all targets effected by image motion or defocus, but because it is needed to extract information on special, high priority targets and targets which are not subject to being re-photographed.

Chief, Applied Photo Science Division,
TSSG/NPIC

Distribution:
Cy 1 - NPIC/TSSG
2 - NPIC/TSSG/RED
3 - NPIC/TSSG/APSD



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2	[redacted]	7 Oct 69	HCP
3			
4			
5			
6	File : DIR file		

	ACTION		DIRECT REPLY		PREPARE REPLY
	APPROVAL		DISPATCH		RECOMMENDATION
	COMMENT		FILE		RETURN
	CONCURRENCE	✓	INFORMATION		SIGNATURE

Remarks:

This is good cogent info & justification for the DIR effort. This should be kept readily available —

HCP

file in working file HCP 10 OCT 1969

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